

SOLID PHASE MICROEXTRACTION DEVICE USING AEROGEL

ABSTRACT OF THE DISCLOSURE

A sample collection substrate of aerogel and/or xerogel materials bound to a support structure is used as a solid phase microextraction (SPME) device. The xerogels and aerogels may be organic or inorganic and doped with metals or other compounds to target specific chemical analytes. The support structure

5 is typically formed of a glass fiber or a metal wire (stainless steel or kovar). The devices are made by applying gel solution to the support structures and drying the solution to form aerogel or xerogel. Aerogel particles may be attached to the wet layer before drying to increase sample collection surface area. These devices are robust, stable in fields of high radiation, and highly

10 effective at collecting gas and liquid samples while maintaining superior mechanical and thermal stability during routine use. Aerogel SPME devices are advantageous for use in GC/MS analyses due to their lack of interfering background and tolerance of GC thermal cycling.